

**REMARKS**

Claims 1-11 are pending in the application. Claims 1-8, 10, and 11 stand rejected. Claims 1, 5, and 7 are independent claims.

Claims 1 has been amended to correct a typographical error that recite the term “these” instead of the term “those. Moreover, claims 1-7 and 8-11 have been amended to make the claims more simple and clear, and to explicitly state that which was implicit in the original claim language. As such, the claims have not been narrowed.

Claims 1-11 stand rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the enablement requirement. In particular, the Office Action indicates that the specification fails to disclose the frequency range at which the device is enabled. Without such information, the Office Action indicates that “it would be impossible for one skilled in the art to make the invention without undue experimentation, or use the invention in the best mode” (present Office Action, page 2-3).

According to the Supreme Court of the United States, the specification of a patent application meets the enablement requirement under 35 U.S.C. 112, first paragraph, if **undue or unreasonable** experimentation is not needed to practice the invention (*Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916)) (emphasis added).

**The Applicant respectfully submits that the Applicant has not indicated that the devices of claims 1-11 are enabled at certain frequency range, but not enabled at other frequency ranges.** Accordingly, the information which is supposedly absent in the present claims, even if applicable, does not appear to be the type that is necessary to use the invention. Instead, the information may be unnecessary information that is preferably omitted from a patent application (*In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331 (Fed. Cir. 1991) (holding that

unnecessary information should be omitted from the application)). As such, the Applicant submits that each of claims 1-11 complies with the 35 U.S.C. 112, first paragraph, and the Applicant respectfully requests withdrawal of the rejection on each claim.

Claims 1-4 stand rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to provide information by which one could ascertain the frequency band covered by or identical to the WDM channels.

In response, the Applicant has amended claim 1 to recite that the “laser laminated on a first portion of the substrate [is] adapted for generating multi-wavelength light including a plurality of channels having different wavelengths...” The Applicant respectfully submits that claim 1, as amended, complies with the requirement of 35 U.S.C. 112, second paragraph. As such, the Applicant respectfully requests withdrawal of the rejection.

The Applicant wishes to thank the Examiner for indicating that claim 9 is allowable if the claim is rewritten as an independent claim, incorporating all features of the base and any intervening claims. The Applicant, at this time, wishes to defer rewriting claim 9, as the Applicant believes that claims 1-11 contain features that patentably distinguishes each claim from the prior art reference.

Claims 1 and 5 stands rejected under 35 U.S.C. ' 102(b), as allegedly being anticipated by Fenner *et al.* (U.S. 3,484,713) (“Fenner”). Claim 1 recites, *inter alia*, “the semiconductor optical amplifier **adapted to reduce a relative intensity of noise in the plurality of channels of the multi-wavelength light and to amplify the multi-wavelength light output from the laser simultaneously.**” Claim 5 recites a similar SOA means.

According to the Federal Circuit, **a claim is anticipated only if a single prior art reference sets forth all features recited in a claim** (*Verdegaal Bros. v. Union Oil Co. of*

*California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)), including those in **functional language** (*In re Schreiber*, 128 F.3d 1473, 1478, 44 USPQ.2d 1429 (Fed. Cir. 1997) (holding that the patent applicant is free to recite features of an apparatus claim in functional language as long as the features are not inherent to the prior art)).

Moreover, the Federal Circuit required the claims and the prior art to be considered in their entirety (see *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)).

In the present case, the Office Action states that neither the semiconductor optical amplifier (“SOA”), as recited in claim 1, nor the SOA means, as recited in claim 5, patentably distinguish claims 1 and 5, respectively, from Fenner. The Office Action states that “[w]hile Fenner does not explicitly teach that the optical amplifier 2 reduces noise, the examiner regards it as inherent that noise (taken to mean spontaneous emission) will reflect off of surface 30, thereby reducing noise. [I]t is regarded as inherent that placing any optical amplifier in front of any laser will reflect (and thereby reduce) some quantity of light that the applicant could consider noise” (present Office Action, page 5).

The Applicant respectfully traverses the rejection. In particular, The Applicant submits that nowhere does Fenner disclose that the surface of the SOA reflects one type of light while amplifying another type of light, at the same time. Therefore, the surface of the SOA does not reduce the intensity of the noise while amplifying the light from the laser simultaneously. Instead, the SOA of Fenner **reduces the intensity of both the noise and the light output from the laser at the surface of the SOA, and thereafter, SOA amplifies the intensity of each of the reduced noise and the reduced light at the gain medium of the SOA.**

Accordingly, Fenner fails to disclose either the SOA or the SOA means that “**adapted to reduce a relative intensity of noise in the plurality of channels of the multi-wavelength light and to amplify the multi-wavelength light output from the laser simultaneously,**” as recited in claims 1 and 5. Fenner, therefore, fails to set forth all structural or functional features of claims 1 and 5, and Fenner, fails to anticipate each claim. The Applicant respectfully requests withdrawal of the rejection.

Claim 7 stand rejected under 35 U.S.C. ' 103(a), as allegedly being obvious over Fenner in view of Fussgänger (U.S. 5,202,780).

Claim 7 recites a system comprising, *inter alia*, a central office, where the central office comprises “**a demultiplexer configured to demultiplex the multi-wavelength light into a plurality of downstream channels having different wavelengths and to output the demultiplexed downstream channels.**”

The Federal Circuit held that to “reject claims in an application under section 103, **[the Office Action] must show an unrebutted prima facie case of obviousness** (*In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998) (citing *In re Deuel*, 51 F.3d 1552, 1557, 34 USPQ2d 1210, 1214 (Fed. Cir. 1995))). The *prima facie* case can be established only if the prior art references, among others, teach **all features** in a claim (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)), including those in **functional language** (*In re Schreiber*, 128 F.3d 1473, 1478, 44 USPQ.2d 1429 (Fed. Cir. 1997)). If the prior art references do not teach all features, the claim is non-obvious, and the Applicant is under no legal obligation to prove non-obviousness of the claim (*In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976)).

In the present case, the Office Action acknowledges that Fenner does not disclose a central office containing a demultiplexer configured to demultiplex the multi-wavelength light

into a plurality of downstream channels and to output the demultiplexed downstream channels (see present Office Action page 8-9). The Office Action indicates that claim 7, nevertheless is unpatentable, as Fussgänger discloses an optical communication system comprising a center and a remote distribution unit VFE, where the center comprises a pair of MUX/DEMUX 13 and 15 and a remote distribution unit VFE further comprises a pair of MUX/DEMUX 21 and 25.

The Applicant respectfully submits that a remote distribution unit VFE comprising a pair of MUX/DEMUX 21 and 22 does not teach a central office comprising “a demultiplexer configured to demultiplex the multi-wavelength light into a plurality of downstream channels having different wavelengths and to output the demultiplexed downstream channels,” as recited in claim 7.

In addition, the Applicant respectfully submits that neither MUX/DEMUX 13 nor MUX/DEMUX 15 contained in Fussgänger’s center is configured to demultiplex the multi-wavelength light into a plurality of downstream channels having different wavelengths and to output the demultiplexed downstream channels. Instead, the MUX/DEMUX 13 is configured, at most, to (1) demultiplex an upstream light from the MUX/DEMUX 15 and (2) multiplex a plurality of downstream light from the local switching center 12 (Figure 1). Meanwhile, the MUX/DEMUX 15 (3) multiplexes downstream light from head station 11 and local switching center 12 and (4) transmits the upstream light to the MUX/DEMUX 13 (id.).

Therefore, neither the MUX/DEMUX 13 nor the MUX/DEMUX 15 contained in the Fussgänger’s center is equivalent to the demultiplexer of claim 7, and Fussgänger does not teach a central office comprising “a demultiplexer configured to demultiplex the multi-wavelength light into a plurality of downstream channels having different wavelengths and to output the demultiplexed downstream channels,” as recited in claim 7.

As such, both Fenner and Fussgänger fail to teach all features of claim 7. The Applicant respectfully submits that claim 7, therefore, is patentable over two references, and the Applicant respectfully requests withdrawal of the rejection.

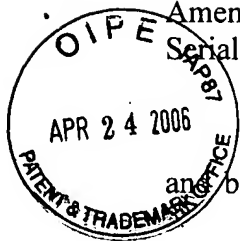
Moreover, the Applicant submits that claim 7 is patentable, as claim 7 recites, *inter alia*, **“the central office comprising... a plurality of photodetectors configured to detect the upstream channels demultiplexed by the first multiplexer/demultiplexer.”**

In the present case, the Office Action indicates that Fenner does not disclose a central office containing a plurality of photodetectors that is configured to detect the upstream channels demultiplexed by the first multiplexer/demultiplexer (see present Office Action page 8-9). The Office Action, however, indicates that the central office comprising the photodetectors does not patentably distinguish claim 7, as Fussgänger discloses transducer(s) UA<sub>n</sub>.

The Applicant respectfully submits that the transducers cited by the Office Action, as allegedly teaching the photodetectors of claim 7, **are located at each subscriber** (Figure 1 and 3). Moreover, each transducer is configured, at most, to receive downstream channel, but not **“configured to detect the upstream channels,”** as does the photodetector of claim 7. The Applicant respectfully submits that a subscriber containing a plurality of transducers, the transducers that is not configured to detect the upstream channels, does not teach a central office containing a plurality of photodetectors, as recited in claim 7.

As such, Fenner and Fussgänger fail to disclose **“the central office comprising... a plurality of photodetectors configured to detect the upstream channels demultiplexed by the first multiplexer/demultiplexer,”** as recited in claim 7, and the references fail to render claim 7 obvious. The Applicant respectfully requests withdrawal of the rejection.

Amendment  
Serial No. 10/798,662



Other claims in this application are each dependent on the independent claims 1, 5, and 7 and are believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of the patentability of each on its own merits is respectfully requested.

Should the Examiner deem that there are any issues which may be best resolved by telephone, please contact the Applicant's undersigned representative at the number listed below.

Respectfully submitted,

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